# Some things I Learned from Trying to Analyze Attainable Uses (aka UAAs)….

## (including examples from Blackbird Mine, Brownlee Reservoir, and Loch Ness)

Chris Mebane

*Formerly of the*

Idaho Department of Environmental Quality, 1994-2003

# I learned that:

- Existence of aquatic life ≠ aquatic life existing use
- UAA's are unprovable.
- UAA's are approvable.
- Standards of review for EPA approval are subjective
  - UAA's based on "appropriate technical and scientific data and analyses" (40 CFR 131.5).
- Other approaches may be preferable in some circumstances
  - More refined use definitions and criteria.
- UAA framework provides a rational approach to revising ill-designated uses and their criteria.

# UAA's are Unprovable

- UAA process relies on negative hypotheses
- One cannot be prove a negative hypothesis; one can only fail to disprove it
  - Absence of a use is unprovable. E.g. "I went fishing and caught no fish, therefore there are no fish in the stream"
  - Must show coldwater aquatic life, salmonid spawning, recreation, etc. have not been existing uses since 1975
  - Human-caused sources of pollution … **cannot** be remedied
- UAAs may require trusting in forecasts
  - "Cannot be remedied …, would cause more damage …, would result in substantial and widespread economic and social impact
  - UAA standard disclaimer – Past performance may not predict future earnings, actual results will vary

# Case Study 1*. Loch Ness: Demonstrating that designated monster refugia habitat is not an existing use

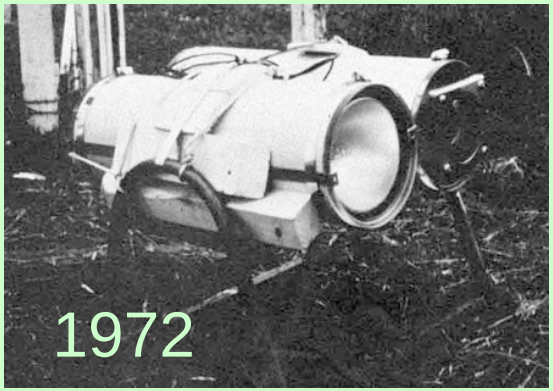
- County Inverness Department of Environmental Quality (IDEQ) was petitioned by the Water and Jet Ski Alliance of Inverness County to remove no-wake regulations previously enacted to protect the sanctity of monster sanctuary and to protect the monster sighting and tour industry
- Petition argued that since there were no longer sustainable monster populations existing in Loch Ness that the criteria were overly restrictive and unwarranted
- The IDEQ conducted a UAA:

*IDEQ. 2004. Supporting Analyses for Docket 58-0102-0002. Idaho Department of Environmental Quality, Boise, ID. April, 2004 21pp.

- Monster Reconnaissance Project (MoRP) has a Loch-wide surface water disturbance trends monitoring network


# Loch Ness UAA

- … and underwater conditions through submarine surveys, sonar, ROV, and continuously recording trends monitoring sites


# Loch Ness UAA

- Pre-1975 surveys were confounded by lack of standard assessment methods, inconsistency in survey crew training, and poor documentation of results

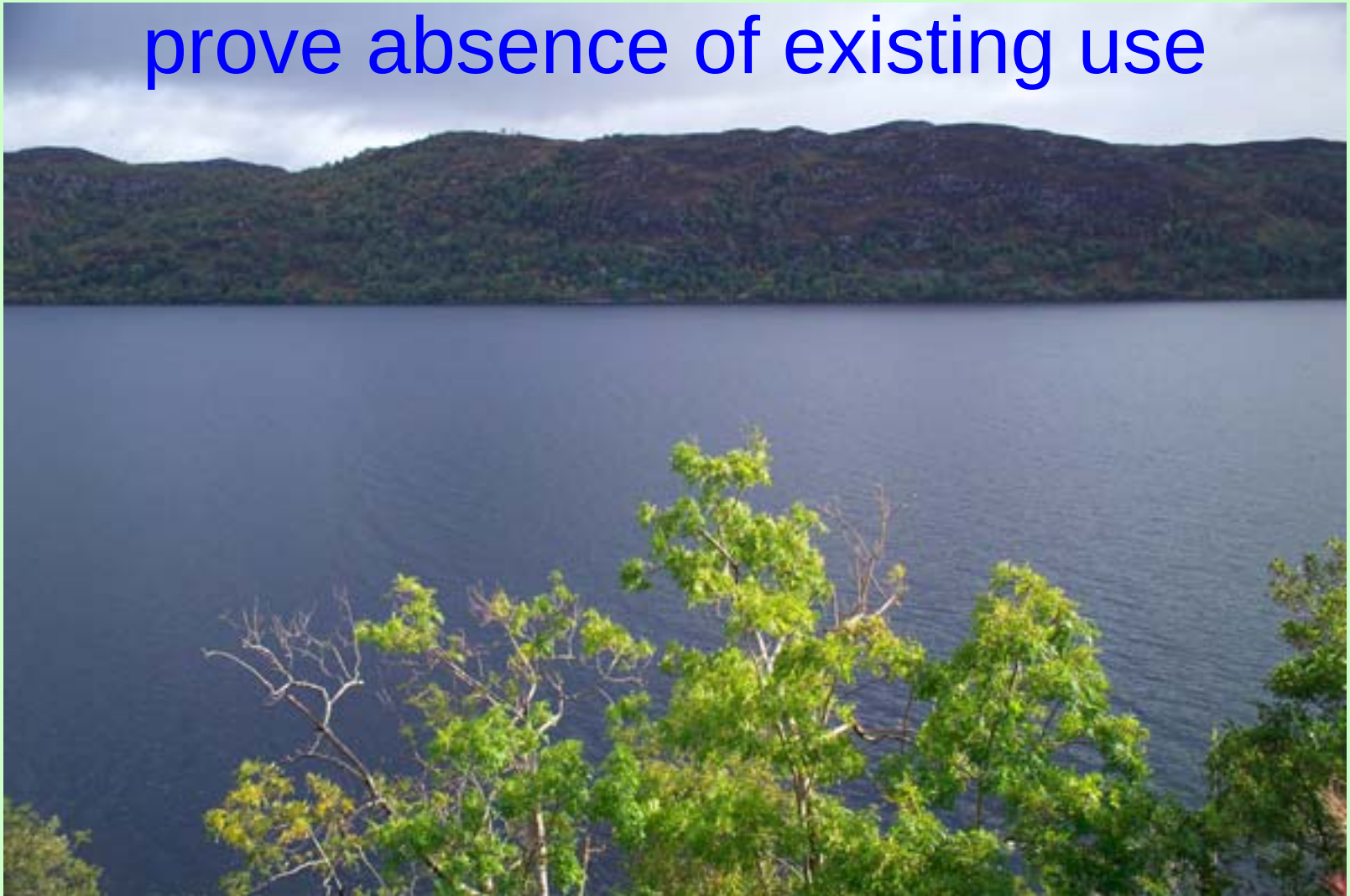
"Flipper" said monster advocates

"Mud bottom" said monster skeptics

# No conclusive evidence of post-1975 aquatic monster existing use was found

- But, monster advocates questioned UAA results
  - Detection limits on underwater monster surveys were low due to limited visibility
  - Monsters are notoriously elusive and may evade noisy surveyors
  - Poor understanding of habitat requirements of juvenile and adult life stages of monsters
  - Sampling may have failed to target critical habitats
  - Lack of consensus of what constituted “sound science”

Alas, at the annual meeting of the Board of Such Matters, it was concluded that the IDEQ failed to prove absence of existing use

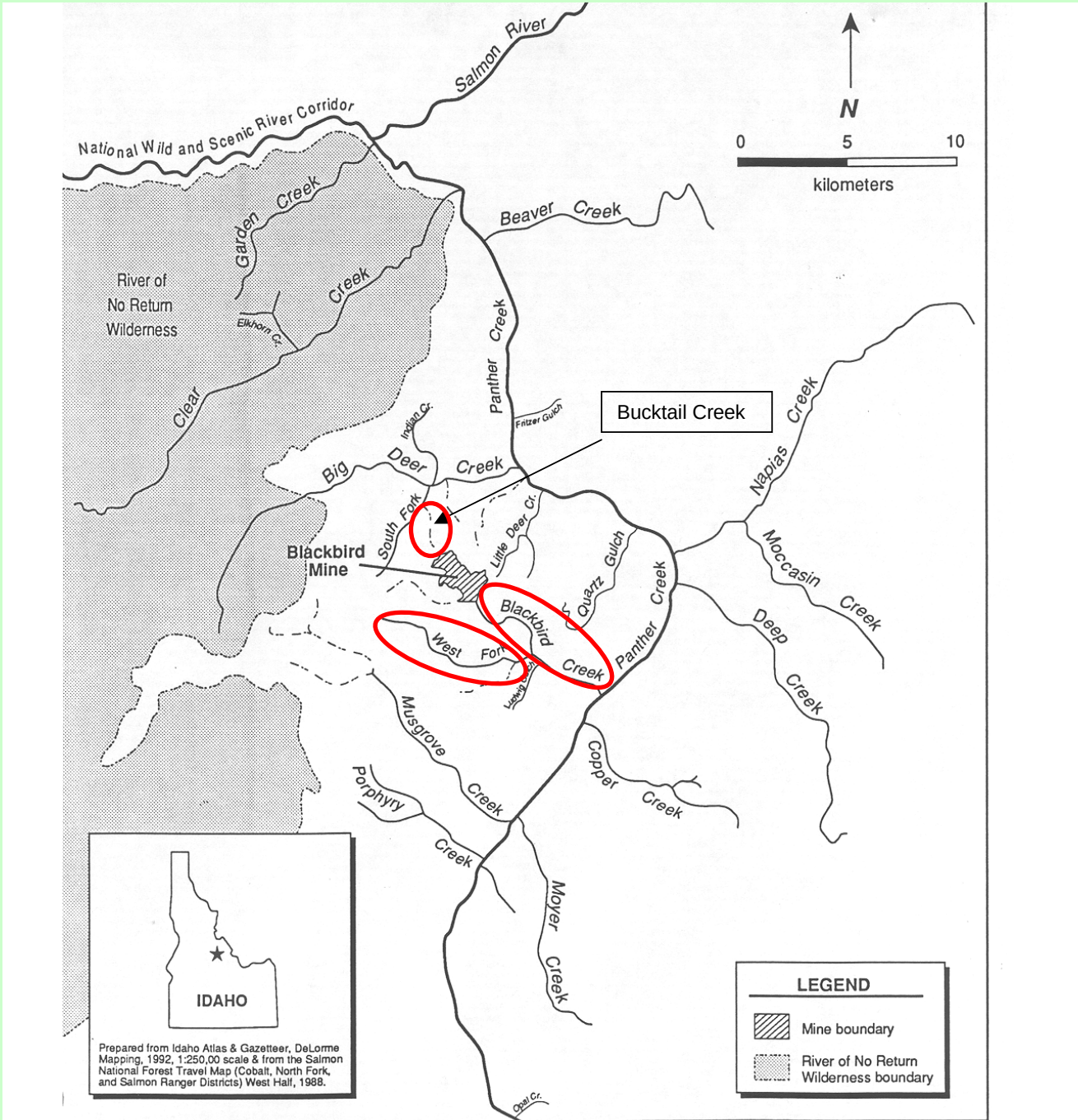


# Blackbird Mine UAAs

- UAAs submitted on 3 streams
- Site subject of intensive studies and restoration efforts under CERCLA (“Superfund”) NRDA and remedial actions
- UAAs initiated and completed by IDEQ
- Impetus was to make CWA regulatory programs (303d, TMDLs) congruent with CERCLA-based court commitments and cleanup process
- Usual Superfund cast of characters
  1. EPA, IDEQ, NOAA, and USFS oversee investigations/cleanups
  2. Blackbird Mine Site Group, at least 3 past and present mining and manufacturing companies, doing the work
  3. 1 + 2 + (many lawyers and consultants) + (big money + big egos) = Contention

# Blackbird Mine UAAs

- Mine pollution subject of litigation in federal court from 1983-1995
- Main focus of litigation and cleanup was restoring Panther Creek, a major tributary of the Salmon River
  - Historically supported Chinook salmon and steelhead runs, extirpated by the early 1960s due to mine pollution
- Mine drained via two tributaries, Blackbird Creek and Big Deer Creek
- Big Deer Creek also considered feasible to restore; Blackbird Creek tacitly considered infeasible
- Objectives and considerations memorialized in federal court in *State of Idaho et al. v. The M.A. Hanna Company, et al. United States District Court (Idaho), Consolidated Case No. 83-4149 (R). 1995 Consent Decree*
- Court rulings under CERCLA arguably not legally controlling under CWA but were at least influential


Salmon River
National Wild and Scenic River Corridor
N
0
5
10
kilometers
Garden Creek
Beaver Creek
River of
No Return
Wilderness
Elkhorn Cr.
Clear Creek
Panther Creek
Indian Cr.
Fritzer Gulch
Bucktail Creek
Napias Creek
Big Deer Creek
South Fork
Little Deer Cr.
Blackbird
Mine
Quartz Gulch
Moccasin Creek
Blackbird Creek
Panther Creek
West Fork
Deep Creek
Musgrove Creek
Copper Creek
Porphyry Creek
Moyer Creek
Opal Cr.
IDAHO
Prepared from Idaho Atlas & Gazetteer, DeLorme Mapping, 1992, 1:250,00 scale & from the Salmon National Forest Travel Map (Cobalt, North Fork, and Salmon Ranger Districts) West Half, 1988.
LEGEND
Mine boundary
River of No Return Wilderness boundary

# Panther Creek

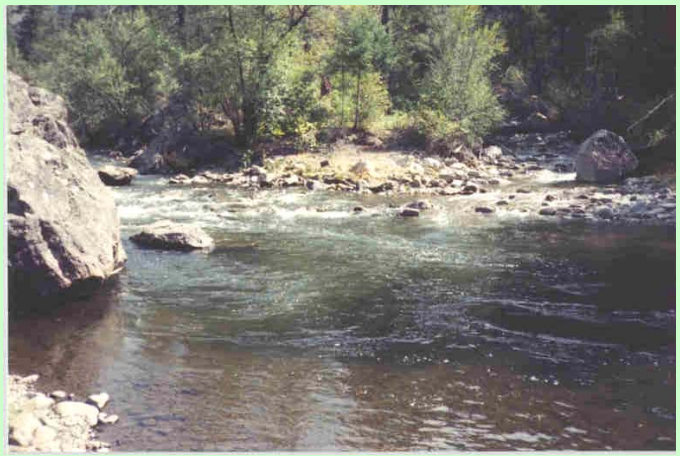
River Mile 26

River Mile 21

River Mile 7

September, 2004

# Big Deer Creek



Confluence looking across Panther, Aug 92

Confluence looking downstream, Sep 04


RM 3.5, just upstream of mine drainage


View down the Bucktail drainage into the Big Deer Creek drainage

# Blackbird Creek

Mixing zone in Panther, RM 0

photo -Elton Modroo

RM 0.1

RM 1.5

WTP at RM 6.5

# Blackbird Creek UAA found that:

- Aquatic life uses (Coldwater biota and salmonid spawning) were not existing uses in lower Blackbird Creek
  - Nearly devoid of aquatic life from 1960s - 1997
  - 4 surveys between 1967 and 1997 found no fish
  - Caged trout all dead <24 hours (1985 and 1993)
  - Low diversity and abundance of aquatic insects compared to reference streams

# and that:

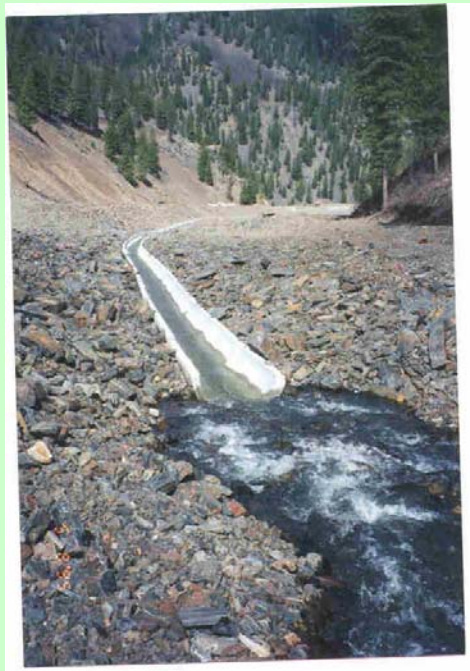
- The sources of metals pollution are human caused and cannot be remedied to the point of meeting criteria in the foreseeable future
  - Best-case engineering forecasts predicted copper loading could be reduced 90%
  - Copper criteria still predicted to be exceeded by 2X to 5X
  - Overall costs on the order of $20 Million
  - Therefore cannot (reasonably) be remedied
  - Can never prove “cannot be remedied”

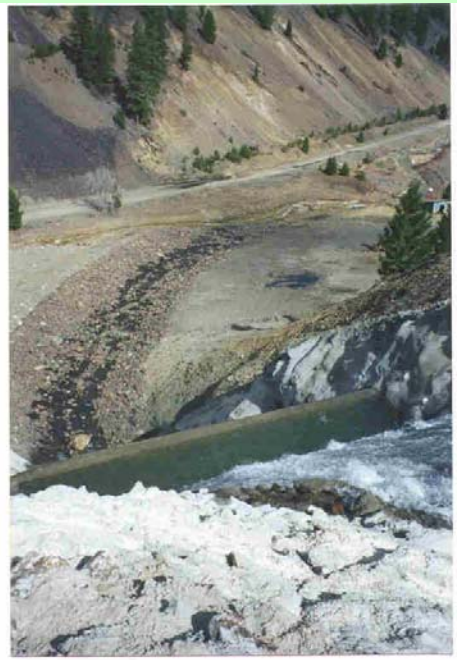
# West Fork Blackbird Creek

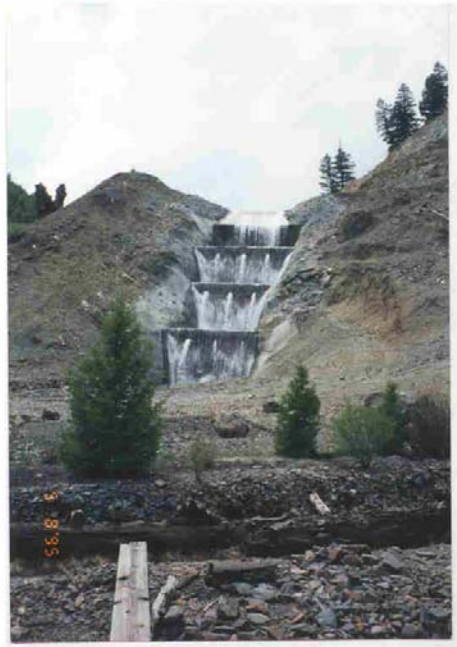

Photo courtesy of Elton Modroo, P.G.

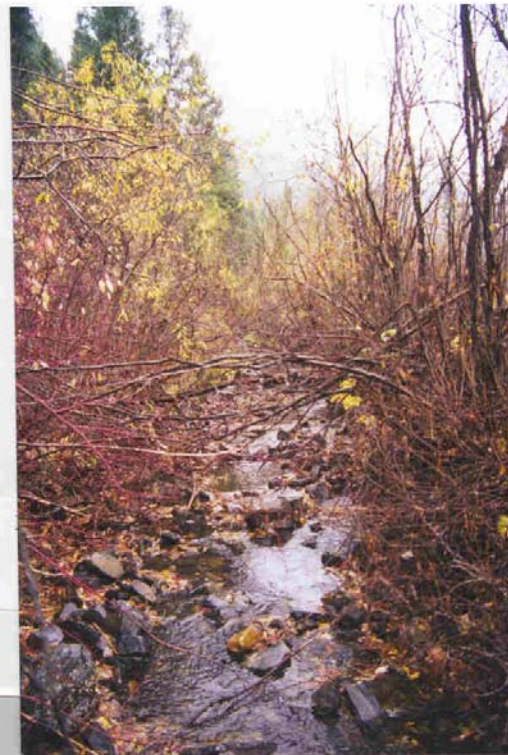
# West Fork Blackbird Creek

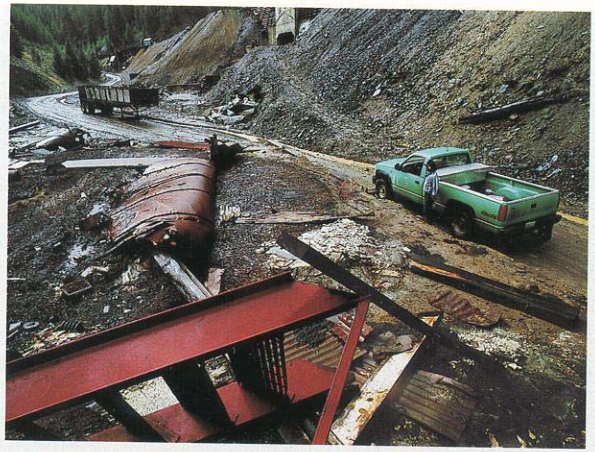
"Hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition"











*A black eye on Idaho, the Blackbird copper and cobalt mine in Salmon National Forest has been targeted as a potential cleanup job for the EPA. Unprofitable since the late 1960s, the mine site remained a tangle of debris until last year. Heavy metals continue to taint nearby Bucktail Creek.*

spending the summer with hi
logging outfit. Shaun's fathe
ning just such equipment, Do
told me, when a log came in
and "gill-poked" him. "It's
work," Shaun said.

I got off with the tree feller,
and watched him start the day
chain saw roared to life, and
skipped off its stump like a kid l
then toppled over. The felle
quick, decisive steps, cutting
backing away, checking the ta
for a clean fall.

This stand of lodgepole pine
a 25-acre clear-cut—a harvestin
can make good environment
lodgepole. I'd been to forests
coast where the clear-cutting h

Bucktail Creek – prior to ~$20M remedial efforts

*National Geographic*, February 1994

# Bucktail Creek after $20M remedial efforts:


# Bucktail Creek – Existing aquatic life

| Site | Number of Taxa | Number of different mayfly, stonefly, and caddisfly taxa | Total number in sample |
|---|---|---|---|
| Bucktail Creek, upper site | 1 | 0 | 1 |
| Bucktail Creek, lower site | 1 | 0 | 1 |
| Copper Creek (reference) | 41 | 26 | 449 |
| Little Deer Creek (reference) | 29 | 18 | 478 |
| Little Jureano Creek (reference) | 38 | 15 | 484 |
| Big Jureano Creek (reference) | 49 | 24 | 590 |

# Existing aquatic life ≠ existing use

- Aquatic life “existing use” and “attainable use” need to be judged against benchmarks for measuring supported uses, not just presence of any life
- Compare with diversities and abundances at reference conditions
  - Tools such as IDEQ’s stream macroinvertebrate index (SMI) or stream fish index (SFI) are useful benchmarking tools
- What if it’s not so clear cut?

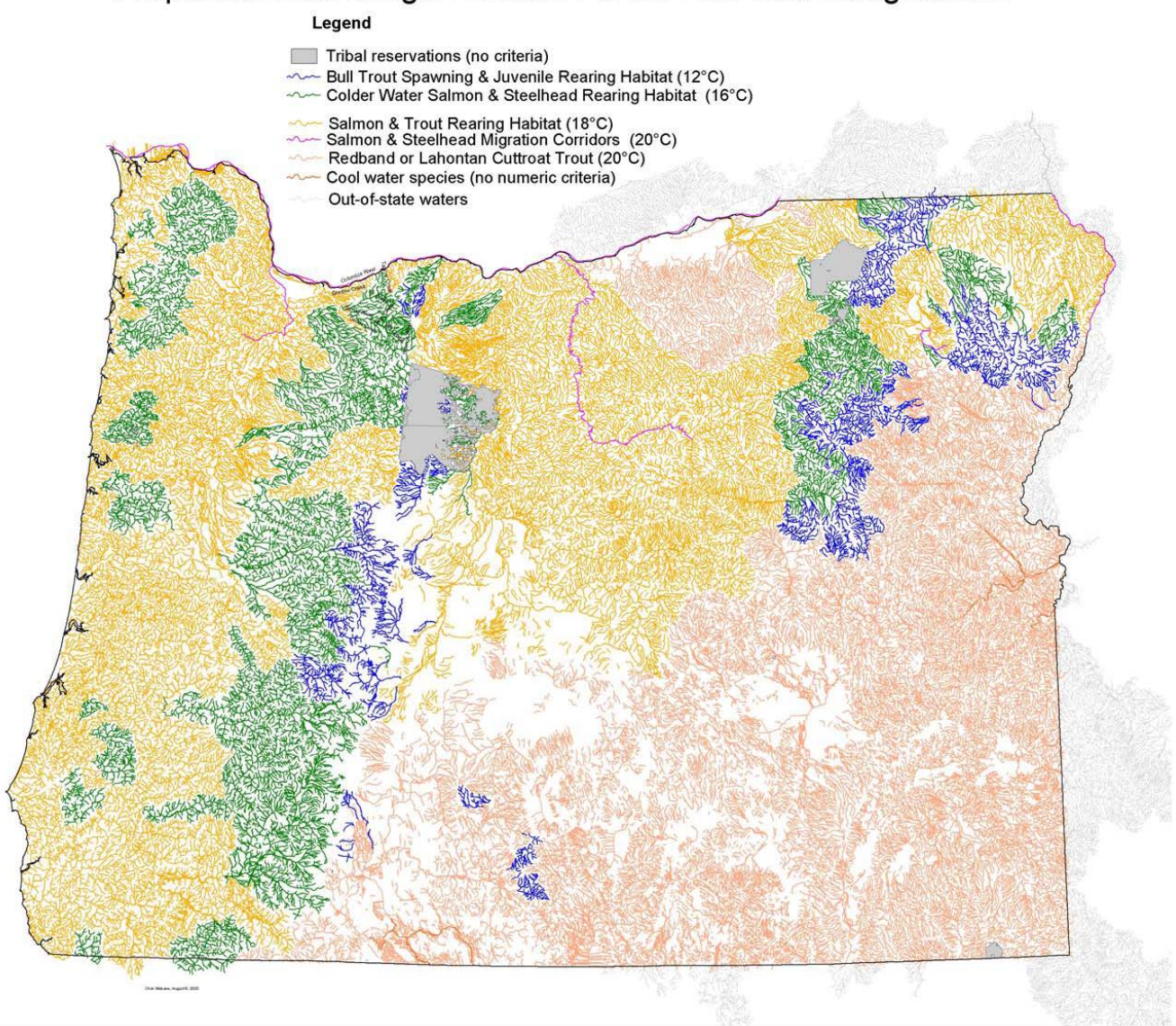
# Brownlee Reservoir Salmonid spawning UAA

Should clearly erroneous use designations require a UAA?

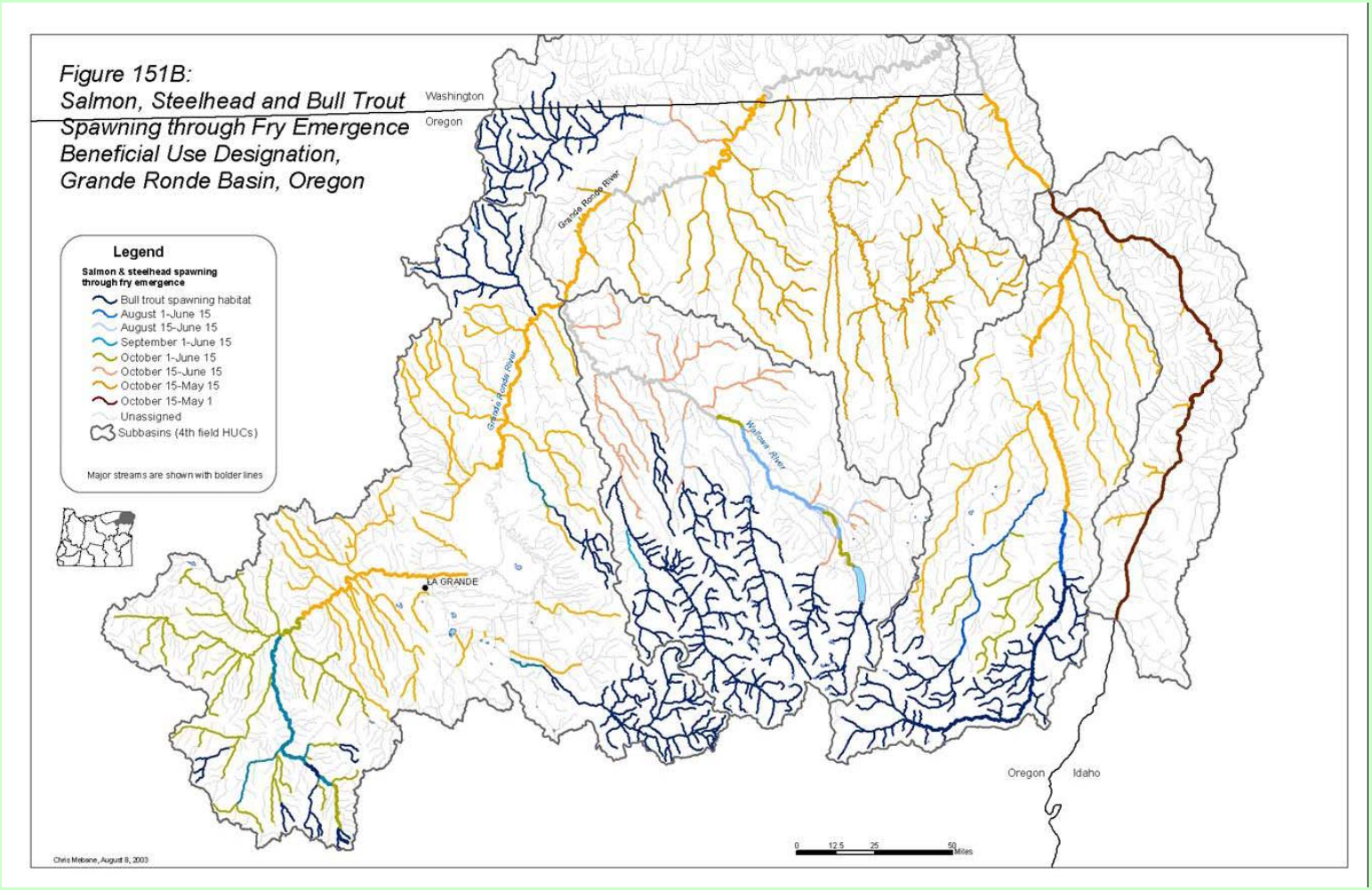
Bryan Horsburgh photo

“Physical conditions related to the natural features of the water body such as lack of proper substrate”…or flow preclude the attainment of the salmonid spawning subcategory of aquatic life use

# More refined use definitions and criteria in lieu of UAAs? Oregon summer temperature example



# More refined use definitions and criteria in lieu of UAAs? Oregon salmonid spawning example



# Blackbird Creek UAA-Epilogue

- Supposed to review and revise uses for UAA'd waters at least once every 3 years
- UAA (written 1997, approved 2000) predicted up to 90% reduction in copper concentrations after remedial efforts
  - 2-5X greater than criteria for supporting aquatic life uses
- 2003 sampling found copper concentrations reduced ~90% from worst prior conditions
  - Copper 1-7X greater than criteria
  - Low numbers of pollution tolerant insects
  - Bull trout, Chinook salmon, rainbow/steelhead collected
  - Copper near criteria at time fish collected
- Revise to some kind of limited use designation with (still harmful) ambient concentrations as criteria?
  - Or narrative criteria for not-acutely toxic?
  - Leave it as is, recognizing limits to precision of use designations, criteria, and assessments?